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## PATENT SPECIFICATION



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### PROVISIONAL SPECIFICATION

#### Ramps for Enabling Vehicles to Surmount Road Obstructions, such as Fire-Hose

We, CLEMENT GARRETT & COMPANY LIMITED, of Leyburn Road, Sheffield 8, a British Company, and LEONARD WEST, of the Company's address, a British Subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to ramps for enabling vehicles to surmount road obstructions, such as fire hose. Considerable damage is frequently occasioned to fire hose consequent upon the same being crossed by road vehicles. If a town is subjected to heavy aerial bombardment and fires and casualties occur in numerous localities, a considerable number of fire hoses are of necessity employed, and many of these extend across different highways. Along many of these essential traffic such as ambulances, additional fire engines, and other road vehicles must pass.

The principal object of the present invention is to provide a simple and efficacious means whereby such hoses can readily and quickly be protected against damage by road vehicles, but it will be appreciated that the invention is not limited in its application to use in circumstances as outlined above and may in general be used for the protection of any type of conductor or pipe which is liable to be damaged by the passage of road vehicles thereover.

According to this invention there is provided at least one longitudinal member of substantially inverted "U" configuration adapted to be placed over the hose, to which is detachably secured on either side thereof a substantially triangular member, said two triangular members each constituting a ramp. It is preferred that the longitudinal member shall be large enough in section to accommodate one hose, and if two or more hoses lying side by side are to be protected independent longitudinal members are provided for each hose, which members are detachably connected to one another.

It is also preferred that the ramp members on the same side of the longitudinal member shall be detachably connected one to another so that the effective

width of the ramp can be extended by abutting sections each comprising at least one longitudinal member with interconnected ramp members on each side, the ramp members of the adjoining sections on the same side of the longitudinal member being detachably connected to one another.

A particular embodiment of the invention will now be described by way of example. Assuming that one hose is to be protected and two ramps over such hose are to be provided, one for each track of a vehicle, two longitudinal members are placed over the hose at spaced positions determined by the vehicle track. Each of these longitudinal members comprises two spaced vertical walls which rest on the ground and are connected by an upper wall at right angles thereto, and the lower end of each vertical wall is bent upwardly to a distance conveniently a third the height of the wall and on the outside thereof, so that on the exterior of each vertical wall on the base thereof a "U" shaped channel is formed. A centrally disposed slot is formed in each bent up part, which slot extends from the upper edge of the bent up part to the base thereof. On each side of the aforesaid member, hereinafter referred to as "the longitudinal member", two hollow triangular members are fitted and the width of each of such members is equal to one half the length of the longitudinal member. Each of the triangular members, when in position, has a rear vertical wall abutting against one of the exterior vertical walls of the longitudinal member and positioned between such wall and the bent up part, and the height of the vertical wall of the triangular member is substantially the same as the height of the vertical wall of the longitudinal member. The roof of the triangular member slopes downwardly to the ground from the vertical wall at an easy angle and on the one side wall of each triangular member, substantially in the middle thereof, there is provided an upstanding flange which is spaced a short distance from such wall so as to provide a

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channel. Each of such flanges may be constituted by a "U" shaped member, the base of which is received into a recess (of the same depth as the thickness of the "U" shaped member), in the said side wall. One face of the said "U" shaped member lies in contact with the inner face of said wall of the triangular member, to which it is connected by rivets or welding, and the "U" shaped member then extends downwardly under the recess and upwardly to a distance below the upper edge of the side wall, being parallel with and spaced a short distance outwardly from such wall.

When, on each side of the longitudinal member two triangular members are fitted, the total width of the triangular members is equal to the length of the longitudinal member, and a recess in the second side wall of a triangular member fits into the base of the channel afforded by the "U" shaped member positioned midway in the length of the first mentioned wall of the adjacent member. The vertical rear wall of each triangular member fits between one of the exterior walls of the longitudinal member and the bent up part, and the movement of the triangular members in the direction of the length of the longitudinal members is prevented by the fact that one of the side walls of each triangular member contacts with one of the edges of the slot formed in the bent up part in the longitudinal member.

If, now, it is desired to extend the length of the ramp one or more sections composed of one longitudinal member and two triangular members on either side thereof are positioned in line with the first set of members, and a side wall of the triangular member on each side of the longitudinal member of each successive section is received in the channel afforded by the "U" shaped member positioned on the side wall of the triangular member of the adjacent section. It will thus be seen that all of the parts are locked against both lateral and longitudinal movement.

If, now, it is desired to provide a ramp for two or more hoses, additional longitudinal members are provided which are formed on one side wall only with a bent up part as described, the other side wall being plain, and being received in the channel between one of the vertical walls of the first mentioned longitudinal member and the bent up part of such wall, and in order to prevent longitudinal movement of these additional longitudinal members each of such latter members on its plain vertical wall is formed midway in its length with two intumed vertical

flanges so that when such member is fitted as aforesaid said flanges abut against the up part on the vertical wall of the next edges of the cut away portion in the bent longitudinal member and thereby prevent lateral movement of the two members. It will be appreciated that any number of these additional longitudinal members may be fitted to accommodate any required number of parallel hoses, and when so fitted the extreme outside vertical walls of the several longitudinal members are each formed with a bent up part having a cut away portion centrally thereof as previously described for the reception of the vertical walls of the triangular members. Furthermore, two or more similar sections can be assembled in line as described, the end triangular members on each side of the assembled longitudinal members being interlocked in manner described.

If desired, the longitudinal members with only one bent up part on one vertical wall may be distinguished from the longitudinal members with a bent up part on each vertical wall such as by being differently coloured.

All of the parts are preferably made from steel and 10 gauge steel is recommended as being suitable for use.

The longitudinal members in one embodiment are 18 inches in length, the over-all width is 5 inches, and the height is 4 inches. The bent up parts are approximately  $\frac{1}{2}$  inch from the vertical walls, and the cut away part is approximately  $\frac{1}{2}$  inch wide. The longitudinal members are formed from sheet steel by bending. Each of the triangular members has a rear vertical wall 4 inches high, and the length of the base which rests on the ground is 14 inches, so that the hypotenuse which forms the surface for the road wheels of the vehicle is approximately 14.8 inches long. The triangular members are formed from sheet steel by a cutting and bending process, and the vertical edges of the rear vertical wall, which wall is  $8\frac{1}{2}$  inches in width, are connected to the vertical edges of the side walls such as by welding. The recess in the base of the side walls is approximately  $4\frac{1}{2}$  inches long, and the "U" shaped members on the one side wall are spaced from such wall to a distance of approximately  $\frac{1}{2}$  inch. It will be understood, of course, that the aforementioned figures are given merely by way of example, and are not to be construed in any limiting sense.

Ramps in accordance with this invention can be quickly and easily fitted, extended, and removed as required, whilst furthermore they are comparatively inexpensive to produce. They will carry very

substantial loads and afford adequate protection to hoses and the like over which the longitudinal members are positioned.

Dated this 10th day of July, 1941.  
ERIC POTTER AND CLARKSON,  
Chartered Patent Agents,  
Eleven Park Row, Nottingham.

## COMPLETE SPECIFICATION

### Ramps for Enabling Vehicles to Surmount Road Obstructions, such as Fire-Hose

We, CLEMENT GARRETT & COMPANY LIMITED, of Leyburn Road, Sheffield 8, a British Company, and LEONARD WEST, of the Company's address, a British Subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to ramps for enabling vehicles to surmount road obstructions, such as fire-hose. Considerable damage is frequently occasioned to fire-hose consequent upon the same being traversed by road vehicles. If a town is subject to heavy aerial bombardment and fires and casualties occur in numerous localities, a considerable number of fire-hoses are of necessity employed, and many of these extend across different highways. Along many of these essential traffic such as ambulances, additional fire engines, and other road vehicles must pass.

The principal object of the present invention is to provide a simple and efficacious means whereby such hoses can readily and quickly be protected against damage by road vehicles, but it will be appreciated that the invention is not limited in its application to use in circumstances as outlined above and may in general be used for the protection of any type of conductor or pipe which is liable to be damaged by the passage of road vehicles thereover.

A fire-hose bridge has already been proposed consisting of a longitudinal bridge member of substantially inverted "U" configuration adapted to be placed over a hose to span it, and two non-interchangeable substantially-triangular ramp members detachably connected to the bridge member one at each side thereof, according to this proposal a plurality of the bridge members may be detachably connected side by side to span a plurality of hoses. According to this invention there is provided a ramp for enabling vehicles to surmount obstructions such as hose and the like, comprising at least one longitudinal bridge member of substantially inverted "U" configuration adapted to be placed over the hose, and a plurality of substantially triangular

ramp members at each side thereof, having detachable connections between the ramp members and the bridge member and between adjacent ramp members that are located at the same side of the bridge member. Thus the various members of which the ramp is built are detachably connected against relative movement lengthwise of the hose and transversely thereof. It is preferred that the longitudinal bridge member shall be large enough in section to accommodate a single hose or the like, and if two or more hoses lying side by side are to be protected independent longitudinal bridge members are provided for each hose, which bridge members are detachably connected together, side by side, against separation. The connection is preferably such as to prevent relative longitudinal movement between said bridge members.

The ramp may incorporate a plurality of bridge members end to end and having those ramp members that are located at the same side of the successive bridge members connected each to the next. Thus the effective width of the ramp can be extended by abutting sections each comprising at least one longitudinal member with inter-connected ramp members on each side, the ramp members of the adjoining sections on the same side of the longitudinal bridge member being detachably connected to one another.

The foregoing, and other features of the invention set out in the appended claims, are incorporated in the construction now to be described in detail with reference to the accompanying drawing, in which

Figure 1 is a perspective view showing two ramps in position, one of them spanning a single hose or the like and the other spanning (by way of example) six hoses, but shown partly broken away

Figure 2 is an underneath perspective view of a ramp;

Figure 3 is an underneath perspective view of a bridge member, and

Figure 4 of a ramp member.

Figure 5 is a section through a ramp for a single hose;

Figure 6 is a section through a ramp for a plurality of hoses;

thereby prevent lateral movement of the two members 12. It will be appreciated that any number of these additional longitudinal bridge members 12 may be fitted to accommodate any required number of parallel hoses, and when so fitted the extreme outside vertical walls 12a of the several longitudinal bridge members 12 are each formed with a bent up part 12c having a cut away portion 12e centrally thereof as previously described for the reception of the vertical walls 13c, 13'c of the triangular ramp members 13, and desirably the central bridge member has a bent up part 12c on each vertical wall 12a for the reception of the walls of the adjacent members 12 that are void of such bent up parts 12c. Each of these walls 12a that is void of a bent up part 12c has the inturned lugs 12f for engaging in the slots 12e. This is shown in Figs. 6 and 7. Furthermore, two or more similar sections can be assembled in line as described, the end triangular ramp members 13 on each side of the assembled longitudinal members being interlocked in manner described.

If desired, the longitudinal bridge members 12 with a bent up part 12c on one vertical wall only, may be distinguished from the longitudinal bridge members with a bent up part on each vertical wall 12a such as by being differently coloured.

All of the parts are preferably made from steel and 10 gauge steel is recommended as being suitable for use.

The longitudinal bridge members 12 in one embodiment are 18 inches in length, the over-all width is 5 inches, and the height is 4 inches. The bent up parts 12c are approximately  $\frac{1}{4}$  inch from the vertical walls 12a, and the cut away part 12e is approximately  $\frac{1}{2}$  inch wide.

The longitudinal bridge members are formed from sheet steel by bending. Each of the triangular ramp members 13 has a rear vertical wall (13a) 4 inches high, and the length of the base which rests on the ground is 18 inches, so that the hypotenuse which forms the surface for the road wheels of the vehicle is approximately 18 $\frac{1}{2}$  inches long. The triangular ramp members 13 are formed from sheet steel by a cutting and bending process, and the vertical edges of the rear vertical wall 13a which wall is 8 $\frac{1}{2}$  inches in width, are connected to the vertical edge of the side walls 13c, 13'c such as by welding. In addition there may be provided a 2 inches wide bracing piece 13g Figs. 2, 4 and 5 extending between and fixed to the side walls 13c, 13'c at a position approximately halfway along the length thereof. The recess

13f or 113' in the base of the side walls 13c or 13'c is approximately 4 $\frac{1}{2}$  inches long, and the lug 13d on the one side wall 13c is spaced from such wall to a distance of approximately  $\frac{1}{4}$  inch. It will be understood, of course, that the aforementioned figures are given merely by way of example, and are not to be construed in any limiting sense.

Ramps in accordance with this invention can be quickly and easily fitted, extended, and removed as required, whilst furthermore they are comparatively inexpensive to produce. They will carry very substantial loads and afford adequate protection to hoses and the like over which the longitudinal members are positioned.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A ramp for enabling vehicles to surmount obstructions such as hose and the like, comprising at least one longitudinal bridge member of substantially able connections between the ramp members and the bridge member and between adjacent ramp members that are located at the same side of the bridge member.

2. A ramp according to Claim 1, comprising a plurality of bridge members detachably connected together side by side against separation.

3. A ramp according to Claim 2, incorporating means for preventing relative longitudinal movement between said bridge members.

4. A ramp according to any of the preceding Claims, incorporating a plurality of bridge members end to end and having those ramp members that are located at the same side of the successive bridge members connected each to the next.

5. A ramp according to any of the preceding claims, having the means for detachably connecting the members together integral therewith or permanently affixed thereto.

6. A ramp according to Claim 5, having on some or all members, bent up portions or lugs for hooking under a part on another member or members.

7. A ramp according to Claim 6, having the base of at least one wall of a bridge member turned up to receive, between it and said wall, the base of a wall of another of the members.

8. A ramp according to Claim 6 or Claim 7, having a side wall of a ramp member provided with a lug aforesaid to hook under a side wall of an adjacent ramp member.

9. A ramp according to Claim 7 or Claims 7 and 8, having the turned-up part on the bridge member interrupted to provide a slot for the reception of
- 5 adjacent side-walls of two ramp members, whereby the latter are located against displacement in the direction of the length of the bridge member.
10. A ramp according to Claim 3, wherein the means for preventing separation is as specified in Claim 6 or Claim 7, and the means for preventing relative longitudinal movement comprises a projection on one member received in a slot
- 15 in the next.
11. A ramp according to any of the preceding Claims, having the ramp members interchangeable.
12. In a ramp according to Claim 1, a bridge member substantially as described 20 herein with reference to, and substantially as shown in, the accompanying drawings.
13. In a ramp according to Claim 1, a ramp member substantially as described 25 herein with reference to, and substantially as shown in, the accompanying drawings.
14. A ramp for enabling vehicles to surmount obstacles such as hose and the like, substantially as described herein 30 with reference to, and substantially as shown in, the accompanying drawings.

Dated this 29th day of June, 1942.  
ERIC POTTER AND CLARKSON,  
Chartered Patent Agents,  
Eleven Park Row, Nottingham.

[This Drawing is a reproduction of the Original on a reduced scale.]

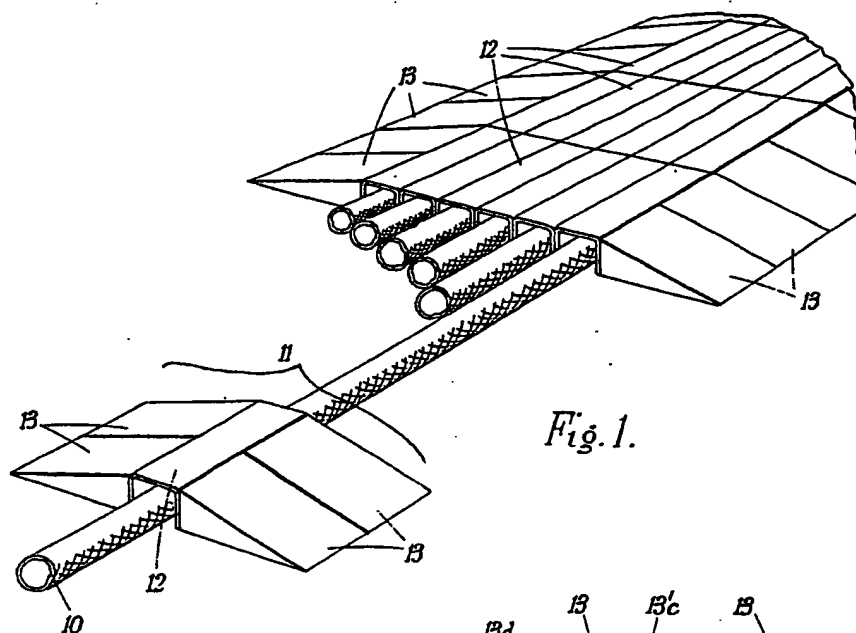


Fig. 1.

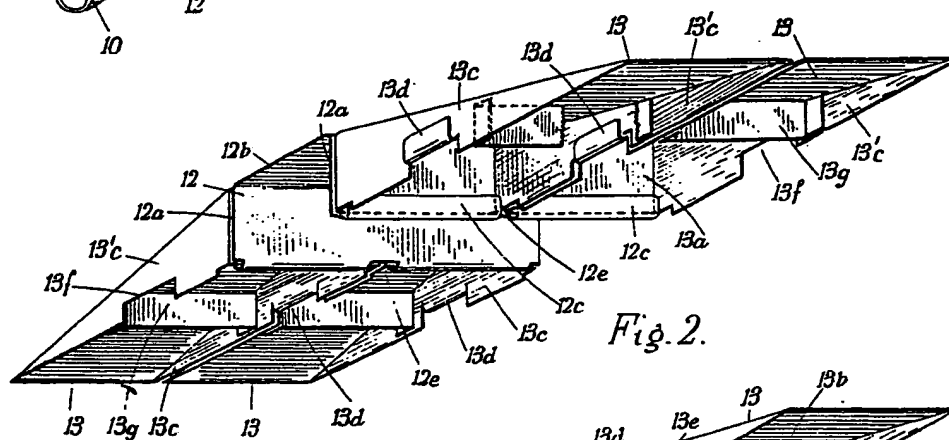


Fig. 2.

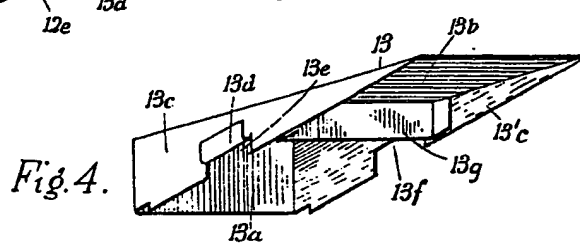


Fig. 4.

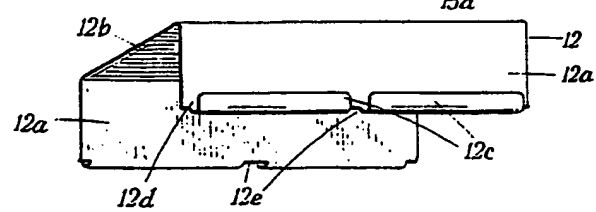


Fig. 3.

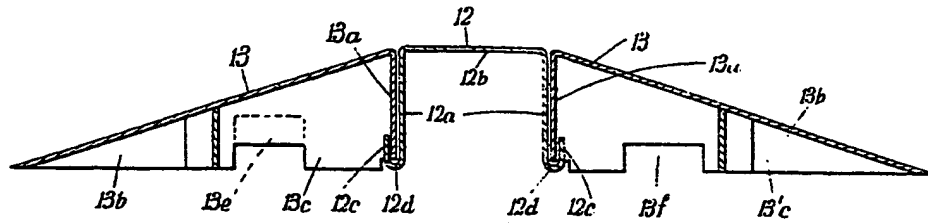


Fig. 5.

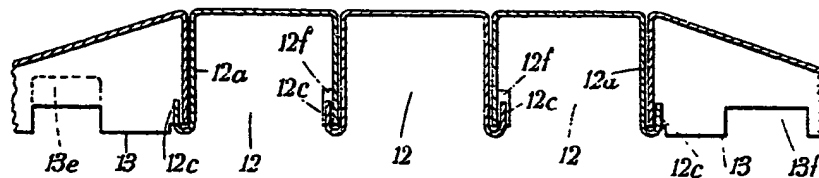


Fig. 6.

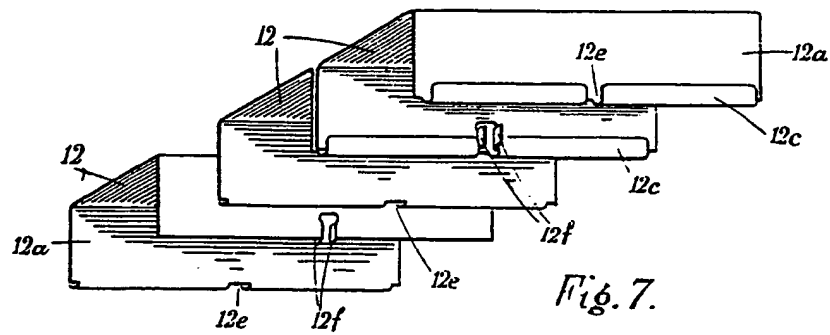


Fig. 7.

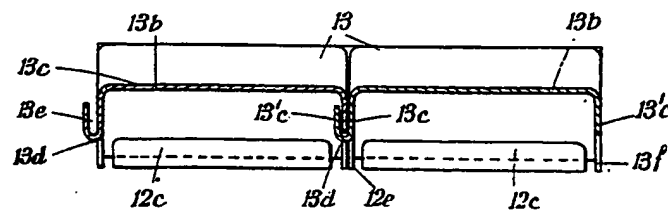


Fig. 8.

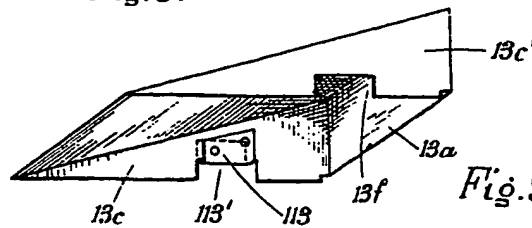


Fig. 9.

